Network Centric Operations (NCO) Case Study

Stryker Brigade Combat Team

ABRIDGED REPORT **VERSION 1.0**

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
01 AUG 2007	**N/A**	**-**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Network Centric Operations "NCO" Case Study: Stryker Brigade Combat Team	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Department of Defense, Office of Force Transformation, Washington,DC,20303**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release, distribution unlimited

13. SUPPLEMENTARY NOTES
The original document contains color images.

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**SAR**	**23**	

Foreword

The purpose of this case study report is to describe the evolution of network enabled capabilities in the context of U.S. Army transformation. The focus is on the background and evolution of the Stryker Brigade capabilities. The study examines innovations that have evolved from the mid 1990s up through current processes.[1] The evidence is drawn primarily from a technical report prepared by the RAND Corporation and open source material. This case study begins with a discussion of the creation and evolution of STRIKER FORCE. This is followed by a review of the co-evolving capabilities developed by the Stryker Brigade Combat Team (SBCT). This includes information regarding the Stryker vehicle, communications, command and control systems, the SBCT's organic organizational design, and leadership training. The study then provides a brief description of several exercises the SBCT participated in, including a detailed account of a highly successful training exercise that occurred at the Joint Readiness Training Center (JRTC) at Fort Polk, LA.

This report is the result of work performed under contract #W74V8H-04-D-0051, for the Office of Force Transformation, performed by Evidence Based Research, Inc.

This report is the result of the effort of many people. The following are the primary contributors:

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[1] Current as of March 2006.

NCO CASE STUDY:
Stryker Brigade Combat Team[2]

"The Army's new car is a lemon." Former U.S. Treasury fraud investigator and Special Forces trooper Lonnie Shoultz's description of the U.S. Army's newest armored vehicle, the Stryker.

"We're absolutely enthusiastic about what the Stryker has done." Gen. Peter J. Schoomaker, the Army chief of staff, to the House Armed Services Committee.

Creation of STRIKE FORCE

During the mid 1990s, the need to rapidly deploy U.S. military forces to locations around the globe increased, while at the same time the U.S. Army's ability to forward deploy decreased due to budget cuts, troop reductions, and an over-reliance on heavy forces. Increasingly, U.S. military planners recognized the need for a rapid response force that could respond to post-Cold War threats. This challenge was linked to the rise of global instability and uncertainty attributed to the post-Cold War world and the decreased presence of U.S. forward-deployed military personnel. As a result, in 1999, the Army Strategic Planning Guidance (ASPG) established procedures outlining the 21st century Army. The established guidelines delineated a way for the Army to become more strategically responsive; that method was through the development of a new organization called STRIKE FORCE.

STRIKE FORCE was created to deploy a tailored combat force package and combat-service support forces to conduct strategically responsive operations in support of joint contingency operations. This new force structure was intended to alleviate three challenges that the Army faced:

- An organizational structure that did not allow for full spectrum strategic responsiveness;
- A heavy operational tempo (OPTEMPO) burden; and
- An inappropriate mix of units including special operations forces (SOFs), conventional forces, and mechanized/light forces required for joint operations.

The STRIKE FORCE Headquarters (HQ) was designed to serve as the means for developing the future force. STRIKE FORCE was also tasked to conduct small-scale contingency operations as well as other offensive and defensive operations.

In 1999, General Shinseki (then U.S. Army Chief of Staff, now retired) stated that the Army "must provide early entry forces that can operate jointly, without access to fixed forward bases" but still have the "power to slug it out and win decisively…heavy forces are too heavy…light forces lack staying power."[3] GEN Shinseki announced that the Army would develop two technologically enhanced, quickly deployable, lethal brigades at Fort Lewis. These brigades would be created using knowledge gained from Force XXI experiments with

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[2] The NCO Harvard Business Review-Like Case Study: "Stryker Brigade Combat Team" is based on: 1) the 2005 Network Centric Operations Case Study: "The Stryker Brigade Combat Team," conducted on behalf of the Office of Force Transformation by RAND and 2) other open-source information.

[3] Shinseki, General (Retired) E.K. Stryker Brigade Combat Team Project Management Office. <http://www.sbct.army.mil/index.htm?content=about.htm&leftnav=leftabout.htm>, accessed 6 April 2005.

commercial off-the-shelf (COTS) technologies. The first brigade to be developed was the 3rd Brigade (Bde), 2d Infantry Division (ID), based out of Fort Lewis, Washington.

While the Army was developing the STRIKE FORCE concept, a new combat vehicle was created dubbed "Stryker." [4] The 3rd Bde, 2nd ID was recognized as the Army's first Stryker Brigade, and it began training on surrogate equipment. The Army's envisioned that the first Stryker Brigade Combat Team (SBCT) would be responsive, deployable, agile, versatile, lethal, survivable, sustainable, and have strategic dominance across the full range of military operations (ROMO).

Co-evolution of Capabilities

In addition to the new combat vehicle, the SBCT incorporated simple technologies designed to facilitate information sharing and speed decisionmaking. The SBCT utilized Command, Control, Computer, Communications, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities that allowed Stryker personnel to gain better situational awareness (SA) of the battlefield before taking action. In other words, the C4ISR capabilities allowed Stryker personnel to "See First, Understand First, Act First, and Finish Decisively, at a time and place of [their] own choosing." Two major SBCT advantages were an improved ability to connect to higher-echelon units and organizations outside the brigade and a greater capability to connect its own constituents and information assets within the brigade. Co-evolved components of the Stryker Mission Capability Package (MCP) included the Stryker vehicle, Technological Platforms, Organic[5] Stryker Units, Leadership Training, and Stryker Certification Training Exercises. The Stryker brigade also benefited from incorporating unmanned aerial vehicle (UAV) and human intelligence (HUMINT) sensors.

The Stryker Vehicle

By June 2002, the first Stryker vehicles were being used by soldiers within the unit. The Stryker vehicle was not only the SBCT's primary combat and combat-support platform, but also the vanguard of the Army's transformation. The Stryker vehicle was lighter than existing tanks and armored vehicles and was capable of transporting a greater number of personnel. Thus, the Stryker vehicle fulfilled GEN Shinseki's requirement that the brigade be mobile and agile enough to deliver rapid movement anywhere in the world in a combat-ready configuration.

While the Stryker force was not designed to be an early-entry force, it filled the gap between early-entry forces and heavier follow-on forces. Furthermore, the Stryker was not the objective vehicle that was to fulfill GEN Shinseki's vision; rather, it was an "interim" vehicle that met the needs of regional commanders-in-chief. Consequently, the Stryker was named the Stryker Interim Armored Vehicle (IAV).

At that time, the Stryker IAV weighed 19 tons, and was an eight-wheeled armored platform that provided a common chassis for 10 different Army vehicles. Stryker vehicles were created with multiple features including robust protection featuring slat armor, part commonality, self-recovery systems, central tire inflation systems, and the ability to reach speeds in excess of

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[4] The term "Stryker" was chosen in honor of two fallen heroes: Pfc Stuart S. Stryker, who served in World War II, and Spc Robert F. Stryker, who served in Vietnam. Both had served in the Army, and both received Medals of Honor for service to their country.

[5] Organic vehicles and supplies are those that are employed by that specific unit for that specific unit; an implication of an organic unit is that the unit is not dependent upon outside sources for vehicles, supplies, etc.

60 mph with a range exceeding 300 miles on 53 gallons of fuel. Stryker vehicles were designed to disembark from a C-130 aircraft in combat-ready status. The Stryker IAV was comprised of two variants: the Infantry Carrier Vehicle (ICV) and the Mobile Gun System (MGS). (Figure 1 shows an example of the Stryker ICV.) The ICV design offered in eight additional configurations: Mortar Carrier (MC), Reconnaissance Vehicle (RV), Fire Support Vehicle (FSV), Medical Evacuation Vehicle (MEV), Engineer Squad Vehicle (ESV), Anti-tank Guided Missile Vehicle (ATGMV), Nuclear, Biological, Chemical (NBC) Reconnaissance Vehicle (NBCRV), and the Commander's Vehicle (CV).

Figure 1. Stryker Infantry Carrier Vehicle[6]

Though the individual Stryker vehicles shared a common platform, each provided specialized capabilities for the SBCT. The MC supported infantry units by providing lethal and accurate high-angle fire for complex-terrain and urban-combat environments. The RV provided a platform for Reconnaissance, Surveillance, Target Acquisition (RSTA) squadrons as well as force SA and real-time intelligence, and was an enabler for sensor and HUMINT-based operations. The FSV supported the SBCT with "first round" fire-for-effect capability by providing automated enhanced surveillance, target identification, acquisition, tracking, and designation, position location, and communications functionality. The MEV was the Battalion Aid Station and provided treatment for advanced injury and trauma cases. Additionally, the MEV served as a platform for the Stryker-organic medic who accompanied infantry soldiers during dismounted operations. The ESV provided maneuver and mobility support capabilities for the organic engineers who provided mobility, force protection, and topographic support to the SBCT. The ATGMV was the SBCT's primary tank-killing system and provided an anti-tank over-watch capability that allowed the SBCT to focus on decisive maneuver by dismounted infantry. The NBCRV provided on-the-move and remote near real-time NBC detection and surveillance in order to increase combat power for the SBCT. The CV provided an operational platform and integrated C4ISR equipment for the unit commanders. Additionally, the CV provided the brigade with the ability to receive, analyze, prepare, and transmit information and data.

[6] United States Army. (2005). From <http://www.army.mil/features/strykerOE/stryker2-(rear-view).jpg>, accessed 24 April 2005.

Vehicle Capabilities

One of the key benefits of Stryker equipped units was the improved speed and mobility. In traditional light infantry units, operation planning times were long with little room for readjustment, partly because the unit was required to close in on the area of operation by foot, which was a slow process. Once the unit was committed to an individual course of action (COA), revising operations and repositioning equipment was difficult, slow, and laborious. The Stryker vehicle gave infantry soldiers the ability to move to an area of operations quickly and the ability to rapidly reposition when necessary. As a result, the Stryker vehicle enabled the soldiers to be more mobile than other traditional light infantry Army units.

Stryker soldiers earned the nicknames "Ghost Soldiers" and "Ghost Riders" because they were able to travel quickly and quietly and deploy while "…[opposition] forces have great difficulty detecting their arrival," explained Col. Nick Justice (acting assistant deputy for acquisition and systems management for the Assistant Secretary of the Army for Acquisitions, Logistics, and Technology).[7] Moreover, Sgt. Benjamin Herman (Stryker team leader from Company C, 1st Battalion, 23rd Infantry Regiment) explained how the enemy typically learned of the SBCT's arrival: "We would show up and kick in their door and that's when they [the enemy] would know we were there."[8]

The speed and mobility combined with other Stryker capabilities gave the Stryker soldiers "assured mobility." As described in "The Stryker Brigade Field Manual 3-21.31":

> *Assured mobility encompasses those actions that give the SBCT commander the ability to deploy, move, and maneuver where and when he desires, without interruption or delay, to achieve the mission. …the imperatives and principles of assured mobility are what enable the Stryker brigade and other future forces to have superior situational understanding and, therefore, unsurpassed freedom of movement. Put simply, this concept describes the processes that enable the commander to see first...understand first...act first...and finish decisively.*[9]

Technologies: Subnet Capabilities

SBCT mission role requirements indicated that the SBCT must exhibit exceptional tactical mobility, air transportability, high baseline vehicle commonality, 14.5 mm integral armor protection, battlefield survivability, and supportability and affordability. A variety of technological solutions contributed to satisfying these specific requirements; other technology enablers helped the SBCT achieve timely shared situational understanding and timely decisionmaking. The five subnets that supported SBCT decisionmaking were the Satellite Communications (SATCOM) wide-area network (WAN), the Tactical Operations Center (TOC)-to-TOC network, the Tactical Internet (TI), the Command Net Radio (CNR) network, and the Global Broadcast System (GBS).

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[7] Army Times. (2004). Stryker Brigade draws praise for Iraq work. From: <http://www.armytimes.com/print.php?f=1-292925-2796930.php>, accessed 27 June 2005.
[8] Army News Service. (2004). Hawaii gets approval for Stryker Brigade. From: <http://www.globalsecurity.org/military/library/news/2004/07/mil-040712-arnews01.htm>, accessed June 28 2005.
[9] United States Army. (2003). *The Stryker Brigade Combat Team: FM 3-21.31*. <http://www.globalsecurity.org/military/library/policy/army/fm/3-21-31/cov.htm>, accessed June 28, 2005.

Different communications technologies supplemented the different brigade subnets. For example, SATCOM WAN was supported by Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) and high frequency military satellite communications. The TI was supported by Enhanced Position Location Reporting System (EPLRS), frequency modulation (FM), and CNR. The communication networks found at echelons battalion and above included SATCOM WAN, TOC-to-TOC, and GBS. These networks were supported by Near Term Digital Radio (NTDR), SMART-T, and GBS. Force XXI Battle Command Brigade and Below (FBCB2) systems were found on all command vehicles within the brigade down to the platoon level.

Much like the concept of the Stryker vehicle, these C4ISR technologies worked in tandem with one another to achieve the common Stryker objectives. However, each of these unique C4ISR systems also provided unique capabilities. For example, SMART-T systems provided the SBCT with the ability to connect to echelons above brigade and to connect to brigade command and control (C2) nodes. EPLRS provided the SBCT solider with broadcast of line-of-sight digital communications. FM allowed CNR to function as the voice-only subnet on the SBCT's TI network. GBS was a high-bandwidth data broadcast network that delivered video, imagery, and other feeds from national information sensors to the SBCT; GBS feeds were located at the SBCT main command post, the brigade support battalion (BSB), the RSTA squadron TOC, and the three infantry battalion TOCs. NTDR supported the TOC-to-TOC network and typically functioned in a multi-access mode that used omni-directional whip antennas. FBCB2 was a platform that allowed units to see and communicate with each other on the battlefield with unprecedented speed, ease, and accuracy.

Technologies: Stryker Brigade Battle Command System

The Stryker brigade battle command system (SBBCS) was modeled after the Army Battle Command System, which was also used in other digitized Army units. The SBBCS differed in that it integrated independent digitized C2 and battle management systems into one group of systems. The major platforms that sustained the SBBCS included: Maneuver Control System (MCS), Advanced Field Artillery Tactical Data System (AFATDS), All Source Analysis System (ASAS), Combat Service Support Control System (CSSCS), Air and Missile Defense Workstation (AMDWS), Global Command and Control System-Army (GCCS-A), and FBCB2. (Figure 2).

MCS supported maneuver planning and provided the central integrating platform for the SBCT's upper TI; it could be found in brigade and battalion TOCs and selected Stryker vehicles. AFATDS was a fire-support planning tool that allowed Stryker personnel to coordinate and optimize the use of field artillery and other long-range assets. ASAS was used to compile information on Stryker enemy forces. It was used in the military intelligence (MI) company and brigade and battalion TOCs. CSSCS was a method of compiling combat support data and provided commanders with information on a variety of logistical needs. The AMDWS provided key information related to sensor and weapon coverage for the air common operational picture. GCCS-A provided a link between Army C2 systems and joint C2 systems. TROJAN Spirit system was an additional system that provided specialized communications equipment for reaching back to national-level intelligence assets. This system also transmitted unmanned aerial vehicle (UAV) imagery and other intelligence data between tactical units.

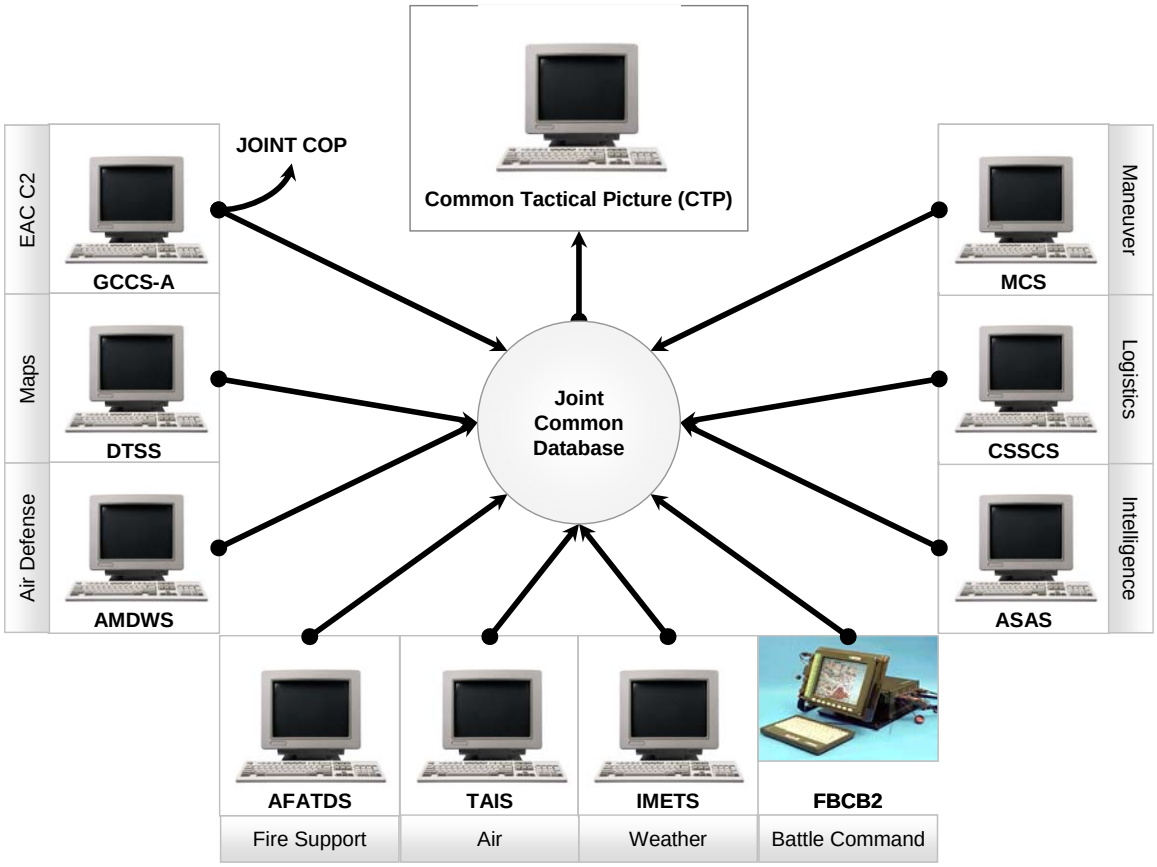

Figure 2. Stryker Technologies

Within Stryker infantry battalions, key C4ISR capabilities included FBCB2, ASAS, MCS, and AFATDS. Within Stryker Signal companies, key C4ISR capabilities included SMART-T, NTDR, EPLRS, FM, and TROJAN Lite. C4ISR capabilities available to general Stryker personnel included GBS, EPLRS, a squad leader video display terminal, and single-channel ground and airborne radio system (SINCGARS) radios, which provided the primary means of command, control, and communications (C3) for ground forces. SINCGARS was capable of transmitting voice and analog or digital data up to 16 kbps.

Organic Organizational Design

The SBCT was designed for independent operations by assigning it an array of organic units.[10] These units provided and shared information, fire support, logistics, etc. to other units within the same brigade. Units organic to the SBCT included: three infantry battalions, a RSTA cavalry squadron, brigade support battalion, field artillery battalion, MI company, engineer company, signal company, anti-tank company, HUMINT support, and a headquarters company.

This organic structure aided the SBCT in a variety of ways. First, it aided in time management because units were no longer required to wait for information and directives from

[10] Organic assets are assigned to a unit by its authorization document, known in the U.S. Army as a Table of Organization and Equipment. When more capabilities are organic, the unit is less dependent upon outside assistance when performing its missions.

other outside units. Because the Stryker units could easily share information and were available to each other, information and decisionmaking occurred much more rapidly. Secondly, the organic capabilities permitted the Stryker commander to plan a more aggressive campaign. A traditional infantry brigade commander would have to request and coordinate RSTA and fire support from higher or adjacent commands. This situation, because of assumed delays and associated uncertainty, typically caused traditional infantry brigade commanders to plan a more conservative operation. However capabilities afforded by organic Stryker units allowed the Stryker commander to plan a more rigorous operation. Additionally these units trained together year-round, as opposed to just training several times during the year. As such, the units were able to work together and exploit enhanced capabilities throughout the year so that when the time came to engage in live combat, the SBCT was more than prepared.

Leadership Training

GEN Shinseki realized that along with technological and organizational development, in order for the SBCT potential to fully be exploited, commanders leading SBCT elements needed to be trained in tactics, techniques, and procedures (TTPs) consistent to the concept of a Stryker brigade. The co-evolution of training, along with technological and organizational development, enabled true battlefield success. Leadership training focused on SBCT fielding and operations, and provided insight into Objective Force doctrine,[11] training, organization, and sustainment. Training taught SBCT leaders how to be agile, and how to be Objective Force leaders for the future. Not only did SBCT officers and noncommissioned officers (NCO) receive tactical leader training, but company, brigade, and battalion staff-level training was also conducted.

Exercises

Since the development and deployment of the Stryker vehicles, the SBCTs participated in extensive exercises, certifications, and evaluations. Exercises have included an Army Test and Evaluation Command exercise, the Operational Evaluation (OE), and the Stryker Initial Operational Test and Evaluation (IOT&E).

The Army Test and Evaluation Command exercise, formally known as the Medium Armored Vehicle Comparison Evaluation, occurred in September 2002. It was a 16-day field-test comparison between the Stryker Armored Vehicle and the M113A3 Armored Personnel Carrier. The IOT&E occurred from May 2003 to September 2003 and collected data on key vehicle performance parameters. The test was designed to gain information about a Stryker-equipped battalion, compared with a baseline infantry battalion. The OE fell under the responsibility of the Commanding General, United States Army Forces Command (FORSCOM), and occurred in three stages over the course of several months. The three OE events included: Deployment Exercise (DEPLOYEX) from 4 March 2003 to 28 May 2003, Arrowhead Lightning I from 1 April 2003 to 11 April 2003, and Arrowhead Lightning II from 17 May 2003 to 27 May 2003.

[11] Objective Force refers to the U.S. Army's Objective Force: a force that will harness the power of technology to empower soldiers and dominate the battlefield. This force would have the ability to see the enemy before the enemy sees them. Information taken from: Boeing. (2003). *Realizing the vision: The U.S. Army's Objective Force*. All Systems Go – Online: Journal of Boeing Integrated Defense Systems, 1(3), accessed 27 June 2005.

Arrowhead Lightning I

The Field Training Exercise (FTX), known formally as Arrowhead Lightning I, was held at the National Training Center (NTC) in Fort Irwin, CA in order to allow the SBCT to integrate with heavy forces and train against a desert-based oppositional force (OPFOR). Arrowhead Lightning I provided the opportunity to train in a mid-to-high intensity operational environment. The brigade participated in missions that included clearing zones, attack, and defense missions. Considering that the SBCT operated in a 50-by-50 kilometer area, much larger than the area used for traditional infantry brigade training, the SBCT truly exploited its speed, agility, intelligence-gathering assets, and situational awareness asset capabilities. (Figure 3 shows a SBCT convoy.) SBCT personnel felt that certain Stryker capabilities significantly contributed to the overall success of the exercise. Spc. Jack Shaffer noted that the Stryker mobility and on-the-move silence were very important. He explained how the central air inflator system aided his team when a tire went flat yet they needed to maintain momentum. "We had been going 10 days and were on our last mission when one of the center tires went flat. The adjustor isolated that tire and kept the air flowing to it to keep it inflated. We continued our mission without any problem."

LTG Edward Soriano stated that Arrowhead Lightning I results indicated that the SBCT was on the right track, specifically that "the training went very well and the SBCT learned a lot. I was pleased with the progress, and [was] pleased with the leadership of the SBCT." BG John Gardner (Deputy Commanding General for Transformation, U.S. Army Training and Doctrine Command) expressed similar sentiments to LTG Soriano in that the results from Arrowhead Lightning I "truly exceeded any expectations of SBCT." Despite the success of Arrowhead Lightning I, BG Gardner said that there were "some minor glitches and problems with SBCT equipment and procedures" that could likely be corrected in later exercises.[12]

Figure 3. Convoy of Stryker vehicles[13]

Arrowhead Lightning II

Several weeks following the conclusion of Arrowhead Lightning I, SBCT once again demonstrated its strategic mobility by moving equipment and cargo, via air, railway, flat-bed trailer, and sea, from the NTC in California to the Joint Readiness Training Center (JRTC) in

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[12] Burlas, J. (2003). *SBCT certification about more than vehicle capabilities.* Army LINK News. From <http://www.globalsecurity.org/military/library/news/2003/05/mil-030522-usa01.htm>, accessed 31 March 2005.
[13] United States Army. (2005). From: <http://www.army.mil/features/strykerOE/convoy3.jpg, accessed>, 24 April 2005.

Louisiana in preparation for Arrowhead Lightning II. The movement itself was a major feat because no other brigade had ever conducted back-to-back maneuvers within a year at the two separate combat training facilities. BG Gardner later stated that, "in a 26-year career, the movement was the most complex I have seen. It went extremely well."[14]

Arrowhead Lightning II was conducted at Fort Polk, LA. The training exercise evaluated SBCT's ability to execute and conduct early-entry, Military Operations on Urbanized Terrain (MOUT), and low-to-mid intensity combat operations. From the onset of the exercise, more than 3,600 SBCT soldiers participated in a constant series of attacks and/or defenses against the highly trained light-force OPFOR, which had a great deal of experience with urban and complex terrain operations. "The Box," as it is known at the JRTC, transformed into a contemporary operating environment (COE) that incorporated conventional and unconventional warfare including terrorists, car bombs, and sniper attacks. While some units fought against a combatant or series of combatants, other units became engaged in civil-military operations in other quadrants of The Box. Figure 4 shows an image of the MOUT facility located at the JRTC at Fort Polk.

Figure 4. Shughart-Gordon MOUT facility at the Joint Readiness Training Center[15]

Shughart-Gordon

Throughout the 10-day exercise in different locations within The Box, SBCT forces engaged the OPFOR in varying degrees of combat intensity. However, the culmination of Arrowhead Lightning II took place in a mock city named Shughart-Gordon. Shughart-Gordon, named after two Medal of Honor recipients who died during Operation RESTORE HOPE in Somalia, was a MOUT complex located in The Box at the JRTC. This MOUT site allowed soldiers to experience realistic training with third-world urban warfare scenarios. Shughart-Gordon was a 7-kilometer square area and included a church, hospital, multi-story buildings, and an underground tunnel/sewer system.

Many argue that the most intense training during Arrowhead Lightning II occurred near the conclusion of the exercise during the operation commonly referred to as the "March til Dawn," a mock operation conducted in and around Shughart-Gordon. Historically when a traditional light infantry brigade attempted March til Dawn, the unit would take until dawn to

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[14] Burlas, J. (2003). *SBCT certification about more than vehicle capabilities.*

[15] Joint Readiness Training Center. (2005). From: <http://www.jrtc-polk.army.mil/JRTCExercise/MOUT.HTM>, accessed 24 April 2005.

complete the objective; hence the name. The Stryker brigade successfully completed the objective, however what occurred during the operation was different from what any other group had ever done before.

Once again, the Stryker brigade's technology, organization, people, and processes (TOPP) innovations aligned so that the unit could "See First, Understand First, Act First, and Finish Decisively, at a time and place of [their] own choosing." Stryker's capabilities allowed the unit to see and know the enemy before decisively attacking. This revised concept of operations (CONOPS) allowed the SBCT to win decisively against the OPFOR while training at the JRTC.

See First

About noon on Friday 23 May 2003, the SBCT commanding officer (CO) received the order to clear the town of Shughart-Gordon. He ordered his RSTA squadron to locate and provide information on at least two-thirds of the OPFOR. If the RSTA team could locate just two-thirds of the OPFOR, the CO believed that the brigade could create a deception route around the OPFOR's largest mass and bypass the enemy to capture the town. By 1800 that Friday evening, the organic Stryker RSTA squadron had begun gathering OPFOR information.

As each RSTA squadron vehicle gathered more and more data, they were able to pass that information along to others via SATCOM and GBS. Furthermore, because of the additional technological and organizational capabilities afforded to Stryker, as the RSTA squadron passed information to the CO, the squadron was also able to relay the information to SBCT battalion commanders as well. Consequently, battalion commanders received near-real-time information simultaneously with the SBCT CO.

Understand First

By 0600 Saturday morning, less than 24 hours after the order to clear Shughart-Gordon, the CO had received enough enemy intelligence to formulate two COAs. Utilizing the TOC-to-TOC C2 Node subnet, the CO issued a brigade operations order containing two COAs to his battalion commanders. The TOC subnet allowed the CO to pass the COAs and other relevant data to all battalion commanders at the same time, thus allowing more time for preparing battle plans rather than sharing information. The battalion commanders then began to plan the execution of the orders and the RSTA elements continued to conduct surveillance and provide updated intelligence to the CO and SBCT battalion commanders.

Using RSTA intelligence, the SBCT CO projected that the OPFOR was most likely not going to wage a battle within Shughart-Gordon. Based on the given information, it seemed as though the OPFOR would most likely seek to interrupt the brigade's advance into Shughart-Gordon. Though the CO could not predict with complete certainty what the OPFOR would plan, he knew that the OPFOR did not have the force power to block all of the routes into Shughart-Gordon. Thus, the CO designed a deceptive plan of attack. He ordered a smaller lead element to clear enemy forces within a small "disruption zone" located along one obvious avenue of approach. Then, while the lead element engaged a growing number of enemy forces located within the disruption zone, the main attack would bypass most OPFOR resistance and seize Shughart-Gordon.

Using the TI, the CO was able to pass fragmentary orders (FRAGOS) to all battalion commanders, who were already issuing their plans and rehearsing alternative COAs. Because battalion commanders had C4ISR capabilities at their disposal, they were able to view and understand the enemy force locations. They did not need to wait to receive that information, as

traditional light infantry brigades would need to do. Thus, while they were waiting for the "go," they continued to refine their advance routes toward Shughart-Gordon to avoid the OPFOR's main strength. Within three hours of the CO selecting a COA, the lead deception attack commenced.

Act First

Early that afternoon, the lead deception element approached the OPFOR located just outside of Shughart-Gordon. As that lead battalion engaged that force, the main combat element by-passed the OPFOR so that it could move on to clear Shughart-Gordon. However, as the main unit was moving toward Shughart-Gordon, they noticed on the COP that the lead battalion had isolated and decimated the OPFOR much sooner than they had planned. In fact, the lead attack was so powerful that the OPFOR withdrew shortly after the battle began. The lead element commander later reported that, "we had a great read by RSTA confirmed by UAV…we selected the best avenues to attack the least defended areas."[16]

The main attack commander had observed the change of events in real time on the COP, and was able to speed the main attack into Shughart-Gordon. The commander did not have to wait for voice communication of the events because he was able to watch the events as they unfolded. The commander later reported, "I could see [on the COP] the lead battalion had accomplished its mission early. I moved up our attack time to maintain momentum."[17] In fact, the commander was able to initiate the main attack 13 hours sooner than he and the SBCT CO had originally planned. Site supervisor Cayln Rayburn later stated that "most units…at the city don't make contact at Shughart-Gordon until around midnight. The speed at which the SBCT arrived [was] amazing."[18]

At about 1700 as the main attack force closed in upon Shughart-Gordon, the RSTA squadron (using UAVs and ground surveillance radars) detected preparations for an OPFOR counterattack. However because the organic RSTA elements were able to identify the location and size of the force and pass that information to other brigade elements in real time, the brigade was able to defeat the enemy with little difficulty.

Just as the OPFOR counterattack was defeated by the Strykers, the clearance of Shughart-Gordon began. Stryker soldiers cleared and secured more than half the buildings in Shughart-Gordon before 0100, and by 0500 the OPFOR was fleeing the city. The main Stryker attack team was able to clear Shughart-Gordon within a few hours.

Because the SBCT was able to attack early and take the OPFOR by surprise, the exercise ended early. Staff Sgt. Michael J. Gateley stated that the SBCT, "was a little quick…[units] normally don't attack [that] early." Spc. Michael Williams, an OPFOR soldier, said that the SBCT was more mobile: "SBCT [came] in quicker and the soldiers dismount[ed] a lot quicker."

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[16] RAND. (2005). A case study of Network Centric Operations: The Stryker Brigade.
[17] Ibid.
[18] Jewell, L. & Hillegass, A. (2003). *SBCT shocks OPFOR during Shughart-Gordon battle*. United States Army Transformation News and Highlights: Stryker Brigade Combat Team. From: <http://www.lewis.army.mil/TRANSFORMATION/news/SBCT%20shocks%20OPFOR%20during%20Shughart-Gordon%20battle.asp>, accessed 6 April 2005.

SSG Gateley also stated that the SBCT "did very well, considering they attacked early. A lot of times, when they attack early, they don't do so well."[19]

LTC Rob Choppa stated that "the OPFOR was amazed at our ability to go wherever we wanted. [The Stryker] allowed us to meet the enemy where we wanted to, not where he wanted to."[20] The SBCT cleared Shughart-Gordon earlier than the typical light infantry brigade, and thus completed the March til Dawn before dawn ever broke.

Finish Decisively

Following Arrowhead Lightning II, the 3rd Bde, 2nd ID SBCT was lauded for the superior combat ability they demonstrated throughout the exercise. The SBCT had successfully employed C4ISR capabilities that allowed them to attack 13 hours ahead of schedule, succeed in taking Shughart-Gordon in just 3 hours, and control about twice the area that light infantry brigades had controlled in past JRTC exercises. Furthermore, Stryker Brigade soldiers experienced a blue-to-red casualty ratio of only 1:1, compared with 10:1 in previous exercises with light infantry units. BG Gardner attributed the differences exhibited between traditional units and the SBCT to battlefield SA and the ability to see first, decide first, and finish decisively through assets found at the division and corps level. He also explained that the difference could also be attributed to the SBCT being able to pass information down the hierarchical chain to the squad level using the digitized network system that permitted real-time data to be applied toward on-the-move mission planning.[21]

Challenges

Though the SBCT exemplified exceptional C4ISR and warfighting ability during its training sessions, the Stryker came under considerable pressure for a variety of increasing safety and security concerns.[22] Complaints included the armor shield's performance against some insurgent tactics, the commander display, the functionality of the main weapon system, and the occurrence of vehicle roll-over accidents.

Another challenge is that the SBCT assumed that vehicle armor could be sacrificed because enhanced SA would increase survivability. In other words, improved SA would enable forces to avoid threats and thus limit the need for highly protective armor. However, current operations take place in urban environments that offer inherently poor SA, thus creating a troubling dilemma.

Other issues included the disparity between current military operations and those that are engaged in during training. Complaints have been that forces are training for the wrong adversaries. The implication was that the adversaries the forces were expecting were non-existent, and that they were instead facing adversaries they were not prepared for.

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[19] Loi, M. (2003). Shughart-Gordon battles show Stryker's mobility. From, <http://www.lewis.army.mil/arrowheadlightning/news/Shughart%20Gordon%20battles%20show%20Stryker%92s%20mobility.asp>, accessed 6 April 2005.

[20] Burlas, J. (2003). *SBCT certification about more than vehicle capabilities.*

[21] Ibid.

[22] Smith, R. J. (31 March 2005). Study faults Army vehicle: *Use of transport in Iraq puts troops at risk, internal report says*. Washington Post, Page A01. From: http://www.washingtonpost.com/wp-dyn/articles/A14284-2005Mar30.html, accessed 6 April 2005.

While enhanced communication and information sharing can be positive warfighting elements, the survivability of the soldier remains essential. As Eric Miller (Senior Defense Investigator at the independent Project on Government Oversight) stated, the lessons learned reports show that "the Pentagon hasn't yet learned that using the battlefield as a testing ground costs lives, not just spiraling dollars."[23]

[23] Ibid.

Appendix A. Acronym List

ABCS	Army Battle Command System
AMDWS	Air and Missile Defense Workstation
ASAS	All Source Analysis System
ASPG	Army Strategic Planning Guidance
ATGMV	Anti-Tank Guided Missile Vehicle
Bde	Brigade
C2	Command and Control
C3	Command, Control, and Communications
C4ISR	Command, Control, Computer, Communications, Intelligence, Surveillance, and Reconnaissance
CNR	Command Net Radio
CO	Commanding Officer
COA	Course Of Action
COE	Contemporary Operating Environment
COP	Common Operational Picture
COTS	Commercial Off The Shelf
CSSCS	Combat Service Support Control System
DEPLOYEX	Deployment Exercise
ESV	Engineer Squad Vehicle
FBCB2	Force XXI Battle Command Brigade and Below
FM	Frequency Modulation

FORSCOM	Forces Command
FRAGO	Fragmentary Order
FSV	Fire Support Vehicle
FTX	Field Training Exercise
GBS	Global Broadcast System
GCCS-A	Global Command and Control System-Army
HQ	Headquarters
HUMINT	Human Intelligence
IAV	Interim Armored Vehicle
ICV	Infantry Carrier Vehicle
ID	Infantry Division
IOT&E	Initial Operational Test and Evaluation
JRTC	Joint Readiness Training Center
LOS	Line Of Sight
MC	Mortar Carrier
MCS	Maneuver Control System
MEV	Medical Evacuation Vehicle
MGS	Mobile Gunner System
MI	Military Intelligence
MOUT	Military Operations on Urbanized Terrain
NBC	Nuclear, Biological, Chemical
NBCRV	Nuclear, Biological, Chemical Reconnaissance Vehicle
NCO	Non-Commissioned Officer

NTC	National Training Center
NTDR	Near Term Digital Radio
OE	Operational Evaluation
OPFOR	Oppositional Force
OPTEMPO	Operational Tempo
ROMO	Range Of Military Operations
RSTA	Reconnaissance, Surveillance, Target Acquisition
RV	Reconnaissance Vehicle
SA	Situational Awareness
SATCOM	Satellite Communications
SBBCS	Stryker Brigade Battle Command System
SBCT	Stryker Brigade Combat Team
SINCGARS	Single-Channel Ground and Airborne Radio System
SMART-T	Secure Mobile Anti-jam Reliable Tactical Terminal
SOF	Special Operations Force
SSU	Shared Situational Understanding
TI	Tactical Internet
TOC	Tactical Operations Center
TTP	Tactic, Technique, Procedure
UAV	Unmanned Aerial Vehicle
WAN	Wide-Area Network

Appendix B. Teaching Note for Use with "Stryker Brigade Combat Team"[24]

"Stryker Brigade Combat Team" is intended for an hour-long discussion in (1) military training courses focused on shared situational awareness, information sharing, command and control, and decisionmaking, and (2) business courses focused on the benefits of information technologies or the challenges of organization survival in complex, evolving business environments.

Summary of the Case

The case study "Stryker Brigade Combat Team" presents the history of the Stryker Brigade and reviews training exercises that the Stryker Brigade Combat Team (SBCT) participated in prior to deploying in Operation Iraqi Freedom (OIF). The case study opens with the creation of STRIKE FORCE, followed by a section that details the capabilities unique to the Stryker Brigade Combat Team (SBCT). This section describes the various technological and organizational capabilities Stryker personnel benefit from such as vehicles, technological platforms, organic units, and training. That section is followed by discussion of a variety of training exercises the SBCT has participated in including Arrowhead Lightning I and Arrowhead Lightning II. This section takes the reader through the decisionmaking process of real-time urban combat missions.

This material is supported by interviews with Stryker personnel, and other persons who participated in Arrowhead Lightning I and Arrowhead Lightning II. The case study requires approximately 30-45 minutes of reading time.

Where to Use the Case

"Stryker Brigade Combat Team" is intended to be used in a number of contexts.

For military personnel, the case describes how new technological platforms and revised organizational and process changes can enhance awareness and mission planning. Specifically, the case study describes how sharing information led the SBCT to advance early on their oppositional force (OPFOR) target, thereby quickening the mission planning process.

For the general audience, the case demonstrates that organizational restructuring can enable decisions and output. By redesigning how individuals communicate and work with one another, task completion can be faster and more effective.

Teaching Objectives and Sample Study Questions

For the military audience, the case study should teach that:

- Improvements made simultaneously across the DOTMLPF spectrum can increase mission effectiveness by orders of magnitude.

    1. Why might improvements made simultaneously over the DOTMLPF spectrum be more effective than improvements made independent of one another?

[24] This Teaching Note is for the Instructor's use only and should not be distributed to students. For questions regarding the use of the case, please contact author Christine W. Balisle at EBR, Inc. at 703-893-6800. You may also contact case study writer and teacher Thomas W. Shreeve at 703-848-9003.

2. How could an initial change across one domain of DOTMLPF create orders of magnitude change across the entire spectrum of DOTMLPF? What are the relationships that exist to create orders of magnitude change?

- A robustly networked force will be more agile than a force not similarly networked.

1. What constitutes force agility?

2. In what ways is a networked force more agile than a non-networked force?

- Increased communication, awareness, and understanding can lead to quickened decisionmaking and action.

1. How do awareness and understanding differ from one another? In what ways do they each impact one another?

2. How could an increase in communication lead to quickened decisionmaking? What are the relationships that exist between communication, awareness, understanding, decisionmaking, and action?

For the general or business audience, the case study should teach that:

- Co-evolution of vehicles, technologies, organic capabilities, and training can provide much more efficiency than improving one area independently.

1. Why might co-evolved improvements be more effective than improvements made independently?

2. How could an initial change in one area create significant changes across the entire spectrum of areas? What are the relationships that exist to create these significant changes?

- By enabling an organization to rely on itself rather than on outside sources, that organization becomes stronger and less dependent upon others.

1. What are the advantages of working within a company that incorporates organic assets?

2. What are the disadvantages of working within a company that incorporates organic assets?

3. In what ways is an organic organization stronger and more productive than an organization without organic assets?

- Quickened decisionmaking is not always the best method of choice. However, when enhanced communications and understanding guide the quickened decisionmaking process, the organization will ultimately succeed.

1. What consequences can be incurred as a result of making decisions or acting without proper understanding?

2. What method of decisionmaking and acting would be most preferable in a corporate or work environment?

Teaching Plan

It is recommended to break this case study apart into three discussion topics.

The first discussion period should center upon why the SBCT was created. Specifically, what global events were occurring that necessitated the need for such an organization? How did the SBCT's vision and goal reflect what was occurring globally?

This section should last about 10 minutes.

The second discussion period should focus on the new capabilities that the SBCT offered its soldiers. Discussion should focus on all aspects of the modified Army unit. Students may have a tendency to focus mainly on technological enhancements; rather, move them towards other aspects such as leadership training, the organic units, and unit training. One question to include in the discussion is, "What effect did the notion of organic units have on the Stryker brigade?"

This discussion should last about 25 minutes.

The third discussion period should involve what happened during Arrowhead Lightning I and Arrowhead Lightning II. Especially important to bring up is the impact of shared situational awareness upon decisionmaking and mission planning. A key point that can be brought up in this section is the story from Arrowhead Lightning II wherein the main combat element viewed the speed with which the lead deceptive element fought against the OPFOR. Because that commander was able to observe that battle, he moved his own element forward, attacked early, and achieved great success on the battlefield. Questions to consider asking students include, "What Stryker Brigade capabilities allowed the brigade to successfully 'See First, Understand First, Act First, and Finish Decisively'?"

This discussion should last about 25 minutes.

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